54TH CONGRESS, 2d Session. } HOUSE OF REPRESENTATIVES. { REPORT No. 2548.

# REORGANIZATION OF THE LINE OF THE ARMY.

JANUARY 19, 1897.—Committed to the Committee of the Whole House on the state of the Union and ordered to be printed.

Mr. HULL, from the Committee on Military Affairs, submitted the following

## REPORT.

[To accompany H. R. 5835.]

The Committee on Military Affairs, to whom was referred the bill (H. R. 5835) to reorganize the line of the Army, etc., having considered the same, recommend that the bill do pass with the following amendments:

On page 2, section 6, line 3, strike out "six" and insert "seven," and on page 3, section 8, line 2, strike out "six" and insert "seven."

The Report of the Secretary of War for 1883 calls the attention of Congress to the needs of the Army in the following language:

The report of the General of the Army has a special interest in being the last annual report that General Sherman will make. At his own request he has been relieved from the command of the Army, preparatory to his retirement from active service under the act of 1882. He has, therefore, thought it best to refrain from making any new recommendations in his report, leaving that duty to his successor in the command of the Army, Lieutenant-General Sheridan. He, however, calls attention to, and renews a former recommendation that a new organization be adopted for the regiments of infantry so that each shall be composed of twelve companies, making three battalions of four companies each. And that the National Guard and volunteers of the States would soon follow suit, and we should have throughout the country these small, handy battalions of four companies instead of the large cumbersome regiments of ten companies, a bad tactical unit and in practice always scattered.

The Annual Report of the Secretary of War for the year 1884 says:

The Lieutenant-General renews the recommendation of General Sherman that there should be made a uniform organization of the three arms of the service by adding two companies with the corresponding majors to each regiment of infantry, and concurs in the recommendation of the Lieutenant-General.

Report of Secretary of War for the year 1885 says:

The Lieutenant-General commends to careful consideration the policy of concentrating troops and putting large garrisons in the vicinity of large cities as a measure of economy, the present railroad facilities being ample to transport them to the frontier speedily when needed, and also again recommends the addition of two companies and two majors to each regiment of infantry, and thus making the three arms of the service uniform. In both these recommendations I concur.

In the report of the Secretary of War for the year 1889 it is stated that—

The Major-General Commanding recommends the reorganization of the artillery, making seven regiments instead of five and dropping the additional first lieutenants, the extra subaltern officers being, in his judgment, no longer necessary.

## The Secretary, continuing, further states:

I fully concur in his recommendations, and deem it very important that authority for these new regiments should be granted. In view of the diminished requirement for the use of the Army against the Indians, it may seem at first as if no additional force is required; but even in times of the most perfect apparent security the strength of the Army should bear some proportion to the population of the country.

From our great increase of population the relative strength of the Army is rapidly diminishing. In 1870, with an enlisted strength of not quite 10,000 larger than now, the ratio of enlisted men to population was one-eleventh of 1 per cent, or 1 man out of 1,105; in 1880, with the enlisted strength 1,000 less than it is now, one-twentieth of 1 per cent; at the present time, with a population of 65,000,000, it is thirty-nine one thousandths, or less than one twenty-fifth of 1 per cent, being 1 man for every 2,569 of population. The authorized strength of the Army is now 30,000, but only 25,000 is appropriated for. On the full basis of 30,000 its relative strength to population would still be considerably less than in 1880, and one-half what it was in 1870. The organization of these two regiments is required by the change in situation as a larger proportion of the force is needed for seacoast defense, and it should be made, if in no other way, by the reorganization of two regiments from the other arms of the service. But this is not called for, would not be the best policy, and I trust will not be considered.

Nearly every warlike power has adopted the three-battalion formation for infantry. Persia, China, and the United States are almost alone in adhering to the single-battalion system. The requirements of our service have been such as to give scant opportunity for the study and trial of new ideas. During our civil war only the present exigency could be considered; at other times our little Army has been scattered in small detachments over our vast domain. The conditions are now changed; the larger part of the Army can soon be at regimental, or at least, battalion posts. The necessity for this formation in the infantry is even greater than in the cavalry and artillery, where it has long been the rule. The reason for the change, always strong, has now, in view of the greater deployment necessary because of the improvements in small arms, become imperative.

Twelve years ago the report to Congress of officers sent to investigate the armies of Europe and Asia and to suggest what changes should be made in our Army to modernize and perfect it strongly urged the adoption of this system. Generals Grant, Sherman, and Sheridan have recommended it, and it is favored by the leading officers in our present service. From a military standpoint the question does not seem to require evidence or argument, but merely examination and action. With this change and the elimination of the extra first lieutenants of artillery, the organization of the three arms of the service will be, as it should be, uniform and upon one harmonious basis.

## The Secretary's report for 1890 says:

As a military question there is no difference of opinion as to the advisability and necessity of the three-battalion formation for infantry. Every European power has adopted it, and all of the leading generals of our country—including Grant, Sherman, and Sheridan—have recommended it. Now that our small Army can be stationed in larger posts, the conditions of service are fully suited to its use. It already prevails in the other arms of the service, and there are even stronger reasons for it in the infantry; besides all ought to be uniform. If we were ever met by a military contingency, we should then be forced to adopt it, and without proper preparation.

Officers are regularly detailed to instruct the National Guard and colleges, and they necessarily instruct in that system of organization which is recognized and fixed by our laws. The country will not adopt a higher standard of military organization than that which the Government offers to it as a model. Our Army is simply a nucleus, a skeleton organization, on which to build in case of necessity, and a correct organization is more important than numbers.

If the present system is erroneous, as all military men agree in saying it is, and I believe that to be the case, there ought to be some way for making the required change. As the matter requires legislative action, I can only commend the subject to the careful consideration of Congress.

## In the Report of the Secretary of War for 1891 is stated:

The question of the three-battalion organization for the infantry has been before Congress, and an account of the great defects of the present system must necessarily be the subject of discussion until remedied by legislation.

* * * * * * *

The single-battalion organization of infantry is radically defective and unfit for actual service under present conditions. During the period since the civil war our infantry organization has remained unchanged, and is now, in respect to the single-battalion feature, obsolete. It is so vicious that the first step, in case of war, must be to abolish it and to start anew. It can not be amended or modified; it is unwieldy, incapable of subdivision to either make or meet attack under methods now prevailing, and the situation grows worse with every improvement of arms. The development of range, rapidity, and accuracy of fire of modern arms has been so great that a smaller and more flexible battalion is essential, for this development makes celerity in handling troops on the field a prime necessity.

The adoption of the three-battalion system has been repeatedly urged by all our distinguished generals, and General Sherman considered it of such commanding importance that he made it the only subject of recommendation in his last report as General of the Army.

But important as it was at that time, it is a necessity now, for under the new tactics required by the increase in range and rapidity of fire a ten-company battalion can not be maneuvered.

## The Secretary of War's report for 1892 says:

Since the present organization of our infantry was adopted many changes have taken place in the art of war, resulting, among other things, in a material modification of the form of infantry regiments. Our stationary condition in this respect has left us with an obsolete organization, the defects of which, however, have been so exhaustively discussed in former reports from this Department that they are only referred to in the present instance as a means of urgently renewing the recommendations of nearly all my predecessors in behalf of three-battalion infantry regiments

## The Secretary of War's report for 1894 says:

I earnestly recommend that Congress enact the legislation necessary to establish in the Army the battalion formation, now adopted by the armies of every other civilized nation. As necessary to effect that change, I recommend the removal of the limit of 25,000 men fixed by the act of June 18, 1874, and a return to the limit fixed by the act of July 15, 1870. Legislative approval of these two propositions will restore to the effective force about 4,000 enlisted men, bringing the actual strength of the Army up to the nominal strength now fixed by law.

The organization of the line of the Army has undergone no material change since the close of the civil war. During this period of thirty years every large foreign army has been completely reorganized. Changes and improvements in arms, ammunition, and equipments have forced upon the leading strategists and tacticians of the great armies of the world the necessity of a broad departure from the old systems. All have adopted the battalion as the tactical unit for infantry and artillery serving as infantry, and nearly all the equivalent of the squadron as the cavalry unit. The light-artillery battalion has a similar composition. Should our Army ever be brought into collision with disciplined foreign troops our present formation would prove so defective as to turn the scale against us in a conflict on terms otherwise equal.

For some years the Secretaries of War, the Generals Commanding the Army, and the most eminent authorities in military science in this country have urged the adoption of the battalion formation, and our most progressive and best-informed officers believe that the organization of our small Army should embody this universally approved result of modern military thought.

Four companies are as large a body as is now possible for one officer to lead and control in action. Formerly, and down to a recent date, the colonel could see and direct the movements of all the men of his regiment who marched and fought in double rank with touch of elbows. Under such conditions a regiment of 1,000 men occupied a front on the battle line no greater than would now be covered by a small battalion of one-third that number. A few years ago small-arms fire was ineffective at distances greater that 600 or 800 yards, while now it will be deadly at ranges of 2,000 yards, or at even greater distances.

In modern warfare the men will act in small groups or singly, and the advance will be made in successive lines in open order. Perfect organization and perfect control by the commander of each unit will be absolutely essential to efficiency and success in the field.

The National Guard of several of the States, more progressive than the General Government, already has the three-battalion organization, and our own Army is being instructed as thoroughly as our defective system will permit, battalions of from two to five companies being improvised in the different garrisons.

The Secretary's report for 1895 practically repeats in the same language his recommendations in 1894.

In the Secretary's report for 1896 he again recommends action to correct the defects of regimental organization that have been pointed out in previous years, and further states that—

> The completion of several defensive works and installation of their modern armament at points where no troops are stationed, and the approaching completion of other modern batteries, suggest the pressing need of a larger force of artillerists than is now available. The present approved plans of sea-coast defense involve the establishment of upward of 100 distinct batteries, grouped in twenty or more harbors. In each must be a garrison of sufficient strength to take care of all the guns and other public property in the harbor, and the maintenance of all in a state of efficient defense. Some addition to the present force of artillery will therefore be indispensably necessary.

The following statement from the Senate report (No. 231) of the first session of the Fifty-second Congress so strongly presents the wisdom of this country adopting the three-battalion organization for the infantry that it is here introduced:

> Of the necessity, under modern conditions of arms, of the three-battalion organization for infantry there can be no question. Every civilized nation has adopted it, and every military authority insists upon it. War attempted to be waged with the single-battalion formation would be national suicide.
>
> The cavalry and artillery arms now have the formation. How much more important it is that the infantry should be aided toward that condition which alone can insure success to our arms.
>
> A leading officer of the British Army says:
>
> "In armies, infantry undoubtedly takes the lead, and to its action that of the other arms must be subordinated. It is the mainstay and backbone of all, whether it be reviewed in the light of numbers or its action upon the field of battle. Its fire is more deadly than that of artillery; its action is sure, while that of cavalry is fitful; upon it the brunt of the battle falls; it suffers more in action, and more on the line of march, and on its tactics the whole superstructure of military operation must be built."
>
> And yet while the other arms of the service have been materially aided toward perfection of organization during the last twenty years, the infantry branch has been permitted to stand still, and to-day is as far behind in tactical organization as though it was armed with the flint-lock musket, carrying the buck-and-ball cartridge, instead of the Springfield breechloader with its deadly missile. It retains the ten-company single-battalion organization that seems to have been adopted in 1821, and which would bring death, defeat, and disaster to our arms in any field engagement upon which we would enter, meeting, as we would, the changed conditions of tactics and armament of armies framed upon modern and approved methods.
>
> In a quarter of a century we have progressed from the muzzle-loading, smooth-bore musket to the breech-loading rifle. The muzzle-loader meant at most two, and usually one, shot a minute, with uncertainty of aim, execution at not exceeding 400, and no assurance of a death-dealing shot at over 200 yards. The breechloader means firing six times a minute, with accuracy of aim, carrying the deadly missile 2,000 yards. The increase of effective range is therefore over five times; which means that if it would take an advancing line four minutes to pass over the shorter space of 400 yards, it would take it twenty minutes to pass over the greater distance of 2,000 yards. Practically, however, it could not pass over the greater space at so rapid a gait, and it is safe to say that the power of the present arm for inflicting loss of life upon an advancing line is at least 10, and perhaps 20, to 1 in relation to the weapon used during the late war.
>
> In the same tactical formation of infantry probably fifteen men would be killed where one was killed with the former firearm. Add to this the powerful machine guns now used, such as the Gatling and Hotchkiss, and the rate of death to the closed files of double rank would be terribly increased. This it is that makes the present single-battalion, double-rank formation a suicidal one, and that has caused its abandonment in other civilized nations. For a line to live under these changed conditions means that it shall be a single line, with intervals or spaces between the men who are to receive attack or make assault. The length of line of the present 1,000 men of a regiment, in double rank, without intervals, is about 300 yards, and in single

rank 600 yards. Every regimental commander of our late war will appreciate the difficulty of commanding even this length of line. In the din of battle neither voice nor bugle note can easily be heard. The noise of conflict has been greatly intensified by the introduction of the breech-loading repeating firearm.

Von Scherff, the great German military writer, referring to the Franco-Prussian war, says: "It was very difficult for officers to keep their men together, because of the noise of a close conflict between breechloader and breechloader."

Let the single line be lengthened by intervals between the files, as it must now be, and how powerless would any colonel be to control and command his regiment. He absolutely needs the three-battalion formation with a subordinate commander, a major, for each battalion. He can not even personally command one and supervise the action of the others, for with the battalions properly placed according to modern tactics, each in rear of the other, the first with its skirmishers and supporting lines and columns holding a front of 200 yards and a depth of 400, the second and third battalions in column, with spaces of about 250 yards intervening; with a total depth (owing to the far penetrating power of the modern arm) of about 1,000 yards, being about the depth of a division prepared for battle as it was formed in the three-line brigade organization during our war, the colonel commanding could not only not be heard, but in most cases he could not see his command. The lieutenant-colonel, as the title implies, is needed as the lieutenant or general assistant of the colonel, and the majors commanding battalions become an absolute necessity for successful warfare.

To sum up the tactical matter, the old line-of-battle formation used during our civil war "now belongs to the past as completely as the Macedonian phalanx, and the general who would use it would simply invite the murder of his army and sacrifice the cause of his country on the alter of imbecile conservatism." The present organization is objectionable in that it has no expansive power and must be totally changed in time of war, thus violating a familiar military maxim that "the plan of an army should be the same in time of peace as in time of war."

This has caused the abandonment by foreign powers of the "system" in vogue here which it is the object of this bill to reorganize.

Among the first and most important recommendations in the report to Congress made by the military commission sent abroad from this country, published in 1877, is the change of system contemplated by this bill.

A paragraph from that report (Upton's Armies of Asia and Europe) shows the organization of the infantry branch of the service abroad:

"The infantry of the German Empire consists, in time of peace, of one hundred and forty-eight regiments of three battalions each (p. 192).

"The influence of the Franco-Prussian war in producing modification in military organization is nowhere more perceptible than in the French infantry. Four companies were substituted for six in the composition of a battalion, and a regiment was ordered to be made of four battalions. Since that time the three-battalion organization has been adopted by France (p. 226).

"In Russia the regiments of the three divisions of the guard and the six divisions of the army of the Caucasus have four battalions of four companies each. All other regiments have three battalions of five companies each (p. 149).

"The Austrian infantry is organized into regiments composed of five field battalions of four companies each and one depot battalion of five companies. In case of war the six battalions are organized into two regiments of three battalions each, the fifth company of the depot battalion remaining as a common depot for both regiments (p. 162).

"In Italy a battalion consists of four companies and a regiment of three battalions and a depot. The riflemen regiments are composed of four battalions each (p. 102).

"How completely the army of Japan has been Europeanized may be inferred from the organization of the infantry. A regiment consists of three battalions of four companies each" (p. 9).

The infantry regiments of England are composed of eight companies, forming two battalions of four companies each. Even this organization, so much better than ours, is severely condemned by her own military critics, notably by the most eminent Gen. Sir Lumley Graham, who insists that the Prussian three-battalion formation is much better. General Upton condemns it in the following terms:

"The adherence of England to a military system inherited from the last century can only be explained by her insular position and the security from invasion afforded by a powerful navy. * * * Should England assail any of her formidable neighbors, we may safely anticipate that the war will be followed either by a speedy reorganization of her army or by the total abandonment of the policy of armed intervention in foreign affairs" (pp. 268, 269).

The infantry organization of but two nations conforms to ours. These are China and Persia, whose armies are laughed at by the world.

The ablest soldiers of the Republic have recommended this change in the strongest language, amounting at times to a supplication. General Grant desired it. Generals Sherman, Sheridan, and Schofield have earnestly urged it.

As long ago as in 1869 General Sherman, then in command, suggested a change in our "system," which received the approval of the Secretary of War.

In 1874–75 General Sherman said:

"Inasmuch as the Regular Army will naturally form the standard of organization for any increase or for new regiments of volunteers, it becomes important to study this subject in the light of past experience and to select that form which is best for peace as well as war. A cavalry regiment is now composed of twelve companies, usually divided into six squadrons of two companies each, or better, subdivided into three battalions of four companies each. This is an excellent form, easily admitting of subdivision as well as union into larger masses.

* * * * * * *

"The ten-company organization is awkward in practice, and I am satisfied that the infantry regiment should have the same identical organization as exists for the cavalry and artillery, namely, twelve companies, so as to be susceptible of division into three battalions of four companies each. These companies should habitually be about 100 men strong, giving 1,200 to a regiment, which in practice would settle down to about 1,000 men. Three such regiments would compose a brigade, three brigades a division, and three divisions a corps. Then by allowing to an infantry corps a brigade of cavalry and six batteries of field artillery, we would have an efficient corps d'armée of 30,000 men whose organization would be simple and most efficient, and whose strength should never be allowed to fall below 25,000 men."

The following extract from a memorandum prepared at the War Department and placed before the House Committee on Military Affairs further sustains the proposition that a reorganization of troops into small battalions for tactical purposes is indispensable to the efficiency of the Army, and explains generally the provisions of the accompanying bill:

The argument from a military standpoint in favor of a subdivision of the regimental line into smaller tactical units under the command of field officers is very briefly stated as follows:

All who have participated in a modern battle, and all students of military science agree, that in order to push home an attack against an enemy who use a weapon that can kill at 2,500 yards, successive lines or waves to fill the losses of the leading troops are necessary, as well as the distribution of the attacking front into groups deployed in lines, so that advantage can be taken of every foot of the ground that offers cover and protection. Necessarily this greatly increases the difficulty of the control of a body of men and their proper leading into hot fight, when all are armed with repeating breech-loaders, this owing to the distribution and great increase in the depth of the zone covered by the enemies' fire which has to be passed over. Formerly a colonel could direct the movements of his whole regiment of 1,000 men and upward, usually having them in hand at all times. Now a small battalion must cover a front equal to that formerly covered by a whole regiment, formed according to the old system. It is therefore essential that the strength of the unit should be reduced to the number which a single leader can handle in the stress of the modern engagement under these conditions. This can best be done by the subdivision of the regiment into three tactical units or battalions of 200 or 400 men each.

The infantry arm must compose the great bulk of every army, and upon its efficiency will depend in a very large degree the final result.

The demand for artillerists in the new fortifications which are now completed and approaching completion can not be supplied from the present force.

The Secretary of War, in a communication dated February 5, 1896, addressed to the chairman of the Committee on Military Affairs, on this bill says:

* * * The present organization is defective in many particulars and the pressing necessity for correcting these defects has been pointed out, not only in the reports of the Secretary of War for 1894–95, but in many reports of my predecessors, and in an annual message to Congress of the President. Every general in command of the Army since General Grant has urgently recommended reorganization of the line.

*Memorandum to accompany a draft of a bill for the reorganization of the line of the Army.*

There has never been a time in the history of our country when any considerable portion of the population desired or necessities demanded a large standing army, an institution obnoxious to the spirit of our people; neither has there ever been a time when the need of a small regularly organized force has not been found essential to the public welfare, and its numbers have varied from a minimum of a few hundred men at the close of the last century, to an authorized maximum of about 75,000 men in 1866. From 1870 to 1874 its legal strength was 30,000; in 1875 it was reduced to 25,000, and it has remained at this strength to the present time. This force is organized into 40 regiments, 1 separate battalion, and various detachments required for staff duties. The numbers of the Hospital Corps is variable, depending upon the needs of the service. It is now 711.

The organization and the distribution of the troops to the several arms on January 1 last, was:

| | Total enlisted. |
|---|---|
| Cavalry | 6,252 |
| Artillery | 4,025 |
| Infantry | 13,125 |
| Battalion of Engineers | 500 |
| Ordnance detachments | 485 |
| West Point detachments | 220 |
| Indian scouts | 62 |
| Signal corps | 50 |
| Ordnance sergeants | 110 |
| Commissary sergeants | 90 |
| Post quartermaster sergeants | 80 |
| Hospital Corps | 711 |
| Total | 25,710 |

The cavalry force is 10 regiments of 12 troops each, only 10 of which are manned, giving an aggregate of about 625 men per regiment, or about 60 men per troop in service. Twenty troops exist only on a skeleton basis.

The artillery is 5 regiments of 12 batteries each, 2 of which are equipped and serve as field artillery. The remaining 10 batteries per regiment, or 50 in all, are in charge of the seacoast defenses. Each artillery regiment numbers about 800 men. The light batteries have 75 and the foot 65 men each.

The infantry is 25 regiments of 10 companies each. The regiment numbers 525 men and the company 65, but 50 of these companies exist only on a skeleton basis.

Were all the companies and troops manned that are now authorized by law the numerical strength of each would of necessity be much less than now. The mean for all organizations now in service is 65 men each, but to man the skeleton companies on same basis would require quite 4,000 additional soldiers.

As respects distribution of this force, the equivalent of 1 regiment of cavalry, 4 of artillery, and 8 of infantry are stationed east of the Mississippi. The remainder—that is to say, 9 regiments of cavalry, 1 of artillery, and 17 of infantry—are west of the Mississippi, including 6 of the 10 light batteries.

*The cavalry.*—The plan of reorganization herewith submitted contemplates no change in the cavalry arm beyond the manning of the skeleton troops and completing the squadron organization, while the total number of troopers would remain unchanged.

*The infantry.*—This arm must furnish the mass of any army. The other arms are accessory and subordinate to the infantry. Upon its tactics the whole superstructure of military operations must be built. Nearly all of the National Guard and militia are of this arm, and they have a right to expect to see in each regular infantry regiment a model for their guidance.

By the reorganization act of 1866 the infantry force was fixed at 45 regiments, the cavalry at 10, and the artillery at 5. In 1869 the number of infantry regiments, officers and men, was reduced nearly one-half, and in 1874 and subsequently a further reduction in men brought the total down from over 28,000 in 1868 to less than 13,000. There was then and has since been no reduction in the cavalry or artillery.

The infantry regiment as at present constituted, 1 colonel, 1 lieutenant-colonel, 1 major, and 10 companies, dates from the army-reorganization act of 1821. Since then the armament, formation, and system of evolution of all modern armies has been changed—some of them many times. Our arms, equipments, and systems of drill have kept pace with the world's progress in these regards, and we have done what was

possible to adapt the incongruous 10-company regiment to the modern requirement of small, compact battalions of 4 companies, but this result has been only partially attainable.

The only change necessary to secure the regimental formation desired is the addition of 2 companies and remanning of the 2 that have been skeletonized, making 12 per regiment in all, divided into 3 battalions, each with its own major to command.

Should the infantry organization be completed as proposed, the number of companies equipped would be increased by 100, making the total infantry force 75 battalions of 4 companies, or about 240 men each. In time of emergency demanding a speedy increase of the number of men, the battalion could be increased to 400 men. The next expansion would involve the addition of a fourth battalion to each regiment. Through these steps the number of infantrymen could be doubled without changing the organization at all.

*The artillery.*—The reorganization of the present artillery force into 7 regiments of 12 batteries each will provide 84 batteries of artillery, an increase of 24, of which 14 may be field batteries and 70 for coast defense.

In emergency the regular troops, with their organizations filled to the maximum, might have to form the first line of defense while the further resources of the country were being made available. In that case the infantry and cavalry regiments would form an army corps of about 40,000 men. Fourteen 6-gun batteries would provide 84 guns for this corps, or a proportion of about 2 guns per 1,000 men. While this proportion might be sufficient on certain theaters of war, it is the smallest that should be contemplated.

The value of preparation in this respect will be evident to any student of the early operations of the civil war. The lack of a navy on the part of the Confederate States made serious attack upon the Federal seaports a thing not to be apprehended. A large proportion of the artillery on seacoast service could therefore be mounted as field batteries, for which service both officers and men had been prepared by training in time of peace. But it is a foregone conclusion that in any war such as is now at all possible, our heavy batteries will be urgently needed in the seacoast fortifications. The above minimum proportion of field guns should therefore be provided as the nucleus for the volunteer batteries which must form the greater portion of this arm in time of war. A reasonable preparation in this respect is all the more necessary in view of the greater time needed for the organization and training of volunteer field artillery as compared with other arms.

The proposed organization of the artillery will provide 70 foot batteries for service in seacoast fortifications. The necessity for such a provision becomes more apparent with every addition to the number of emplacements, guns, and carriages in the modern defenses.

The problem is, on the one hand, to determine the minimum number of trained men necessary as "care takers" of costly material in time of peace, and the minimum number needed as a nucleus for the war garrisons; on the other hand, to reconcile these numbers with a reasonable limitation of cost.

When our system of defenses is completed, it will require a total of 29,314 enlisted men to provide one relief for all the guns and mortars. On the peace footing the 70 heavy batteries would have a trifle over 4,000 men, every one of whom would be a trained gunner. With the maximum strength now contemplated by the Revised Statutes, their strength would be nearly 10,000 men; by a further possible increase of the enlisted strength of these batteries they could provide between 17,000 and 18,000 men—and in either case, the additional men, scattered among the old organizations, would become quickly trained. The latter number would provide the war garrisons first needed for the more important harbors. In any event there would be a carefully trained body of at least 4,000 gunners, with their officers, to be scattered among the various fortifications for the training of volunteer organizations in peace, and as a nucleus for the garrisons in time of war. The ultimate economy resulting from a sufficient number of properly trained gunners will be apparent when it is considered that it costs for powder and projectiles alone:

| To fire one round from the— | |
|---|---|
| 8-inch B. L. rifle | $164.55 |
| 10-inch B. L. rifle | 322.40 |
| 12-inch B. L. rifle | 561.70 |
| 12-inch B. L. mortar | 219.65 |
| 8-inch pneumatic gun | 280.00 |
| 15-inch pneumatic gun | 650.00 |

The total number of separate fortifications projected and partially completed is a little more than 100. In some harbors there will be 1; in others there will be 10,

12, and 15. Not all of these will require permanent garrisons in time of peace. The work of instruction will be carried on in the larger fortifications, while detachments sent out from time to time will suffice for the care and preservation of material in the others. It is believed that 70 companies of seacoast artillery will enable this work to be properly done, but that it is the minimum number that should be expected to do so.

*Redistribution, 30,000 men.*—This improvement could be accomplished through an addition to the present enlisted force of about 4,300 men, and will leave the total strength the same as that fixed by section 1115 of the Revised Statutes. The distribution would then stand about as follows:

| | Men. |
|---|---|
| Cavalry, 30 squadrons | 6,170 |
| Artillery, 14 light batteries and 70 seacoast batteries | 5,075 |
| Infantry, 75 battalions | 16,325 |
| Engineers, 1 battalion | 500 |
| Ordnance detachments | 485 |
| West Point detachments | 215 |
| Indian scouts | 42 |
| Signal corps | 50 |
| Ordnance sergeants | 110 |
| Quartermaster sergeants | 80 |
| Commissary sergeants | 80 |
| Hospital Corps | 711 |
| Miscellaneous | 147 |
| Total | 30,000 |

Such a force, considered with reference to a territory of 3,000,000 square miles, provides 1 soldier to 100 square miles.

*Cost.*—The additional expense involved amounts to about 6⅞ per cent. of the present annual cost of the Army, and the increase in the effective strength of the regiments will be quite 18 per cent.

The effect of the proposed changes upon expenditures has been computed with a great deal of care. Every feature affecting cost has been considered, and the exhibit herewith gives a full and complete statement of the result. The crude results may be stated as follows (for details see exhibit herewith):

| | |
|---|---|
| Increase for salaries of commissioned officers | $528,880 |
| Increase for pay of enlisted men | 738,156 |
| Increase for clothing of enlisted men | 200,386 |
| Increase for subsistence of enlisted men | 278,251 |
| Forage, etc., for additional horses | 24,400 |
| Total increase over present expenditure for pay, rations, clothing, and forage | 1,770,073 |

*Conclusion.*—Promotion is but an incidental feature, but this measure, if enacted, will remove inequalities in respect to promotion that have been the subject of well-founded criticism.

The organization will meet the present requirements and all that can be foreseen; it will place the Army on a plane of efficiency never before reached, and will give to many deserving officers the promotion to which their age and long and efficient service entitle them. Promotions will be equalized in the three arms, and many just causes of complaint will be removed.

*Proposed reorganization of the line of the Army.*

| | Colonels. | Lieutenant-colonels. | Majors. | Captains. | First lieutenants. | Second lieutenants. | Total officers. | Companies. | Regimental noncommissioned officers. | First sergeants. | Sergeants. | Corporals. | Musicians. | Farriers and saddlers. | Artificers and wagoners. | Privates. | Total enlisted men. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cavalry: | | | | | | | | | | | | | | | | | |
| Now | 10 | 10 | 30 | 120 | 140 | 120 | 430 | 100 | 50 | 100 | 500 | 400 | 200 | 300 | 100 | 4,520 | 6,170 |
| Proposed | 10 | 10 | 30 | 120 | 140 | 120 | 430 | 120 | 50 | 120 | 600 | 480 | 240 | 360 | .... | 4,320 | 6,170 |
| Increase | .. | .. | .. | .... | .... | .... | ..... | 20 | .... | 20 | 100 | 80 | 40 | 60 | .... | ..... | ..... |
| Decrease | .. | .. | .. | .... | .... | .... | ..... | .... | .... | .... | ..... | ..... | ..... | .... | 100 | 200 | ..... |
| Each troop | .. | .. | .. | 1 | 1 | 1 | ..... | .... | .... | 1 | 5 | 4 | 2 | 3 | .... | 36 | 51 |
| Artillery: *a* | | | | | | | | | | | | | | | | | |
| Now | 5 | 5 | 15 | 60 | 130 | 65 | 280 | 60 | 25 | 60 | 260 | 240 | 120 | .... | 180 | 3,140 | 4,025 |
| Proposed | 7 | 7 | 21 | 84 | 98 | 84 | 301 | 84 | 35 | 84 | 504 | 392 | 168 | 42 | .... | 3,850 | 5,075 |
| Increase | 2 | 2 | 6 | 24 | ... | 19 | 21 | 24 | 10 | 24 | 244 | 152 | 48 | 42 | .... | 710 | 1,050 |
| Decrease | .. | .. | .. | .... | 32 | .... | ..... | .... | .... | .... | ..... | ..... | ..... | .... | 180 | ..... | ..... |
| Each l. battery | .. | .. | .. | 1 | 1 | 1 | ..... | .... | .... | 1 | 6 | 8 | 2 | 3 | .... | 50 | 70 |
| Each f. battery | .. | .. | .. | 1 | 1 | 1 | ..... | .... | .... | 1 | 6 | 4 | 2 | .... | .... | 45 | 58 |
| Infantry: *b* | | | | | | | | | | | | | | | | | |
| Now | 25 | 25 | 25 | 250 | 300 | 250 | 875 | 200 | 125 | 200 | 800 | 800 | 400 | .... | 600 | 10,200 | 13,125 |
| Proposed | 25 | 25 | 75 | 300 | 350 | 300 | 1,075 | 300 | 125 | 300 | 1,200 | 1,200 | 600 | .... | .... | 12,900 | 16,325 |
| Increase | .. | .. | 50 | 50 | 50 | 50 | 200 | 100 | .... | 100 | 400 | 400 | 200 | .... | .... | 2,700 | 3,200 |
| Decrease | .. | .. | .. | .... | .... | .... | ..... | .... | .... | .... | ..... | ..... | ..... | .... | 600 | ..... | ..... |
| Each company | .. | .. | .. | 1 | 1 | 1 | ..... | .... | .... | 1 | 4 | 4 | 2 | .... | .... | 43 | 54 |
| Total now | 40 | 40 | 70 | 430 | 570 | 435 | 1,585 | *c*430 | 200 | 360 | 1,560 | 1,440 | 720 | 300 | 880 | 17,860 | 23,320 |
| Total proposed | 42 | 42 | 126 | 504 | 588 | 504 | 1,806 | 504 | 210 | 504 | 2,304 | 2,072 | 1,008 | 402 | .... | 21,070 | 27,570 |
| Total increase | 2 | 2 | 56 | 74 | 18 | 69 | 221 | 74 | 10 | 144 | 744 | 632 | 288 | 102 | .... | 3,210 | 4,250 |
| Total decrease | .. | .. | .. | .... | .... | .... | ..... | .... | .... | .... | ..... | ..... | ..... | .... | 880 | ..... | ..... |

*a* Promotions: 2 lieutenant-colonels; 4 majors; 10 captains; 34 first lieutenants; 2 second lieutenants. To be appointed: 21 second lieutenants.

*b* Promotions: 50 captains; 100 first lieutenants; 150 second lieutenants. To be appointed: 200 second lieutenants.

*c* Includes 70 skeleton organizations.

*Reorganization—Effect upon annual expense.*

FOR COMMISSIONED OFFICERS.

INCREASE.

Cavalry:

No change.

Artillery:

| | |
|---|---|
| 2 colonels, at $4,500 | $9,000 |
| 2 lieutenant-colonels, at $4,000 | 8,000 |
| 6 majors, at $3,500 | 21,000 |
| 4 captains, at $2,800 | 11,200 |
| 20 captains, at $2,500 | 50,400 |
| 19 second lieutenants, at $1,400 | 26,600 |
| Total artillery | 126,200 |

Infantry:

| | |
|---|---|
| 50 majors, at $3,500 | 175,000 |
| 50 captains, at $2,500 | 126,000 |
| 50 first lieutenants, at $1,800 | 90,000 |
| 50 second lieutenants, at $1,400 | 70,000 |
| Total infantry | 461,000 |

| | |
|---|---|
| Total artillery | $126,200 |
| Total all arms | 587,200 |
| Total decrease | 58,320 |
| Net increase | 528,880 |
| Forage for mounted officers' horses, 2 regiments artillery, 44 horses, at $100 | 4,400 |
| Forage, etc., for 200 horses for new batteries, at $100 | 20,000 |
| Total for enlisted men | 1,216,793 |
| Grand total additional | 1,770,073 |

DECREASE.

| | |
|---|---|
| Cavalry: | |
| No change. | |
| Artillery: | |
| 6 first lieutenants, at $1,920 | 11,520 |
| 26 first lieutenants, at $1,800 | 46,800 |
| Total artillery | 58,320 |

FOR ENLISTED MEN.

INCREASE.

| | |
|---|---|
| Cavalry: | |
| 20 first sergeants, at $300 | 6,000 |
| 100 sergeants, at $216 | 21,600 |
| 80 corporals, at $180 | 14,400 |
| 40 musicians, at $156 | 6,240 |
| 60 farriers and saddlers, at $180 | 10,800 |
| Total cavalry | 59,040 |
| Artillery: | |
| 10 regimental noncommissioned officers | 2,064 |
| 24 first sergeants, at $300 | 7,200 |
| 244 sergeants, at $216 | 52,700 |
| 152 corporals, at $180 | 27,360 |
| 48 musicians, at $156 | 7,488 |
| 42 farriers and saddlers, at $180 | 9,160 |
| 710 privates, at $156 | 110,760 |
| Total artillery | 216,732 |
| Infantry: | |
| 100 first sergeants, at $300 | 30,000 |
| 400 sergeants, at $216 | 86,400 |
| 400 corporals, at $180 | 72,000 |
| 200 musicians, at $156 | 31,200 |
| 2,700 privates, at $156 | 421,200 |
| 44 privates, staff, at $156 | 6,864 |
| Total infantry | 647,664 |
| Total artillery | 216,732 |
| Total cavalry | 59,040 |
| Total all arms | 923,436 |
| Total decrease | 185,280 |
| Net increase | 738,156 |
| Clothing for 4,294 enlisted men, at $46.67 | 200,386 |
| Subsistence for 4,294 enlisted men, at $64.80 | 278,251 |
| Total, enlisted men | 1,216,793 |

DECREASE.

| | |
|---|---|
| Cavalry: | |
| 100 wagoners, at $168 | $16,800 |
| 200 privates, at $156 | 31,200 |
| Total cavalry | 48,000 |
| Artillery: | |
| 120 artificers, at $180 | 21,600 |
| 60 wagoners, at $168 | 10,080 |
| Total artillery | 31,680 |
| Infantry: | |
| 400 artificers, at $180 | 72,000 |
| 200 wagoners, at $168 | 33,600 |
| Total infantry | 105,600 |
| Total artillery | 31,680 |
| Total cavalry | 48,000 |
| Total decrease | 185,280 |